Quarterly Newsletter
April - June 2014
Issue 2

NOAA NESDIS

JPSS

Joint Polar Satellite System

A collaborative mission between NOAA and NASA

www.jpss.noaa.gov

Harry Cikanek
Director

From Harry

Welcome to the second issue of the JPSS Quarterly Newsletter; we are pleased to share our continued success with you. The Suomi National Polar Partnership (Suomi-NPP) mission continues to operate well. We declared it as the primary polar satellite for weather at NOAA, taking over for NOAA-19 on May 1. The JPSS-1 mission is also progressing well. Two JPSS-1 instruments—CERES and OMPS—and the JPSS-1 Mission Critical Design Review were completed. I would like to thank our partners across government and industry whose hard work and dedication to mission will ensure we deliver this critical satellite system on schedule and on budget. We hope that you enjoyed the first issue of the JPSS Newsletter in April, and if you have not had a chance to read it you may do so by clicking here.

JPSS Satellites May Provide Valuable Information for Active Wildfire Detection

On April 21, JPSS and GOES-R colleagues and scientists participated in the second joint JPSS and GOES-R Science Seminar. Among other topics, they discussed how JPSS satellite data played a role in active fire detection during last year's wildfires, and what lessons learned in the 2013 season could be incorporated to better support the federal, state and local wildfire suppression activities.

Ivan Csiszar, JPSS active fire product development team lead from NOAA/NESDIS Center for Satellite Applications and Research presented findings to the audience, along with two colleagues from University of Maryland, College Park and University of Wisconsin-Madison.

"Satellite observations can provide valuable information on the location and intensity of fire events, particularly in remote areas and during periods of the day when ground-based and airborne observations are scarce or not available at all," Csiszar said. "This information can also support smoke and air quality analysis and forecasts, as well as the prediction of future fire behavior."

Figure 1. This May 15, 2014 image, captured by the VIIRS instrument on the NOAA/NASA Suomi NPP satellite, shows numerous large wildfires burning across sections of northern Baja and southern California, producing plumes of moderate to dense smoke. Credit: NOAA Visualization Lab

The hosts also described how the VIIRS instrument, as well as instruments on Geostationary Operational Environmental Satellites (GOES), provided additional information, like fire location and intensity, to incident meteorologists (IMETs) from NOAA's National Weather Service (NWS).

Did You Know? … Data from JPSS satellites support all of NOAA's mission areas, including preparing for a more "Weather-Ready Nation."

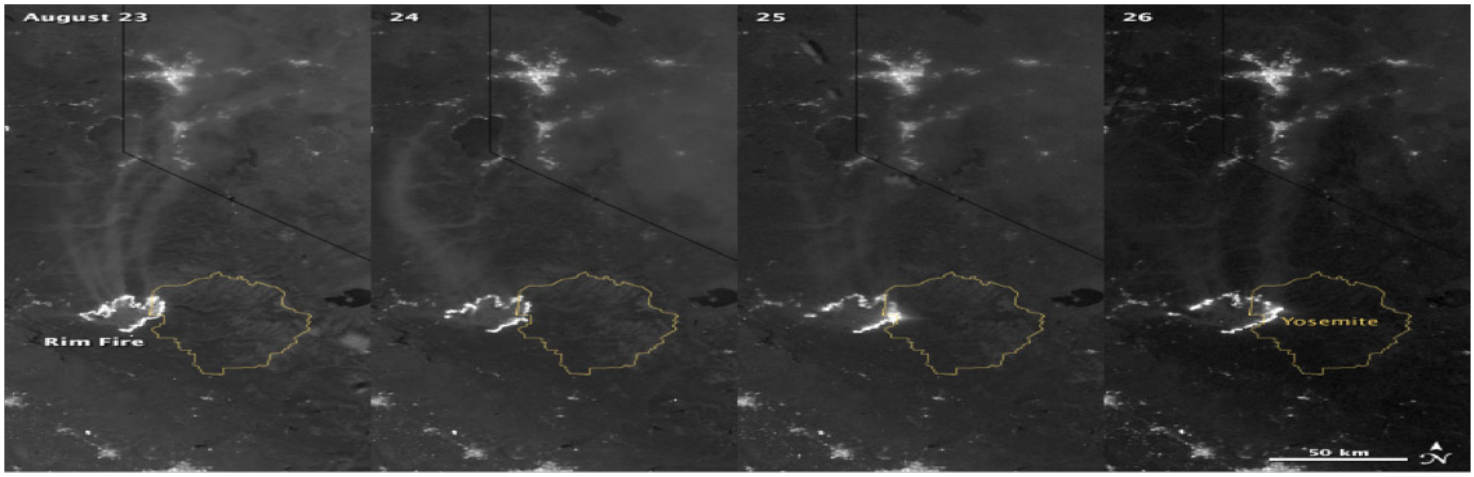

Figure 2. An imagery composite of the Rim Fire captured by the Day/Night Band on the VIIRS instrument at night, beginning August 23, 2013. Credit: NOAA

IMETs provide critical situational intelligence to inform incident decisions on the ground during wildfires, like the 2013 California Rim Fire. In only four days, the Rim Fire grew to more than 100,000 acres in response to a heat wave, record-breaking drought, and past fire suppression.

"This year we have lessons learned and we can adjust our approach to improve the use of VIIRS and GOES observations and also get ready for good quality and high-frequency data from next generation geostationary instruments," Csiszar said.

The analysis and findings from the 2013 fires will be valuable as the 2014 fire season gets underway. Recent fires in San Diego County, California and the Baja Peninsula prove that the drought conditions in the region make it vulnerable to fire.

"We will be working further to ensure quick and easy access to the satellite information to help decision making in situations when time is critical," Csiszar said. "With a better understanding of the on-the-ground operations, we will work on developing a one-stop, customized interface to all applicable satellite products, such as Moderate Resolution Imaging Spectroradiometer (MODIS), VIIRS and GOES, and continue the interaction with the end users via on-site visits and training and outreach activities."

Two JPSS-1 Instruments Another Step Closer to Integration

Two of the five instruments that will fly on the JPSS-1 satellite successfully completed pre-shipment review this quarter. The Clouds and the Earth's Radiant Energy System (CERES) and Ozone Mapping Profiler Suite (OMPS) will be on board the JPSS-1 satellite mission scheduled to launch in early 2017. CERES was delivered in preparation for spacecraft integration to begin later this year. The instrument measures reflected sunlight and thermal radiation emitted by the Earth and builds on the highly successful legacy instruments flown on NOAA's previous Polar-orbiting Operational Environmental Satellites (POES) and NASA's Earth Observing System (EOS) missions. Long-term satellite data from CERES will help scientists and researchers understand the links between the Earth's energy balance, both incoming and outgoing, and parts of the atmosphere that affect it. Data from CERES will also improve observations of seasonal climate forecasts, including large-scale events like El Niño and La Niña.

OMPS tracks the health of the ozone layer and measures the concentration of ozone in the Earth's atmosphere. Data from OMPS continues three decades of total ozone measurements and ozone profile records. OMPS measurements are used by ozone-assessment researchers and policy makers as an input to global climate models. It is also useful when combined with cloud predictions, which produce enhanced ultraviolet index forecasts—providing public awareness about the harm of UV damage. NOAA's National Weather Service calculates the UV Index forecasts based on ozone measurements from NOAA satellites and the Environmental Protection Agency (EPA) produces the reports.

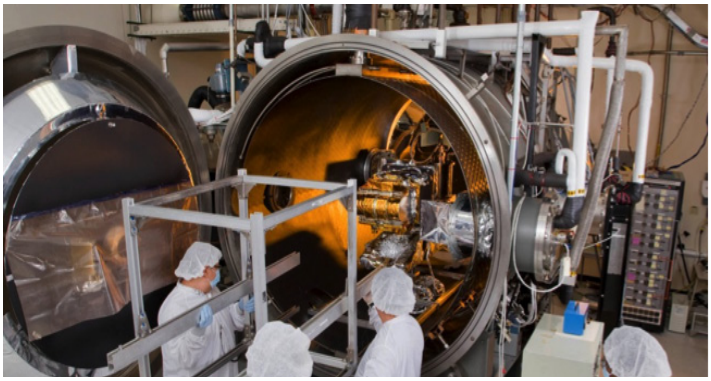

Figure 3. CERES completes thermal vacuum testing at Northrop Grumman's manufacturing facility in Redondo Beach, Calif. This sensor will be integrated onto the JPSS-1 spacecraft, scheduled for launch in early 2017. Credit: Northrop Grumman Corporation

Suomi NPP is Primary Polar-orbiting Weather Satellite

On May 1, 2014, the NOAA/NASA Suomi NPP satellite was named as the primary operational polar-orbiting spacecraft for NOAA's operational weather forecasting mission. The NWS uses Suomi NPP data in its numerical weather prediction models. Observations from the satellites are improving the accuracy and extending the range of three to seven day global forecasts, which are critical to have in advance of significant weather events, including hurricanes and winter storms.

Suomi NPP has priority within the day-to-day operations of NESDIS and replaces NOAA-19 as the primary satellite. NOAA-19 will remain a critical part of NOAA's polar constellation and provide valuable contributions to NWS forecasts. Designating new satellites as primary is a regular part of NESDIS' satellite lifecycle. As a new satellite and instruments become available and are proven, they rise to the primary position.

NWS uses JPSS data in models for medium- and long-term forecasting. JPSS also enables forecasters to monitor and predict near-term weather in Polar Regions (particularly Alaska), track weather at night, and enables scientists to monitor and predict weather patterns with greater accuracy and to study long-term climate trends by extending the more than 30-year satellite data record.

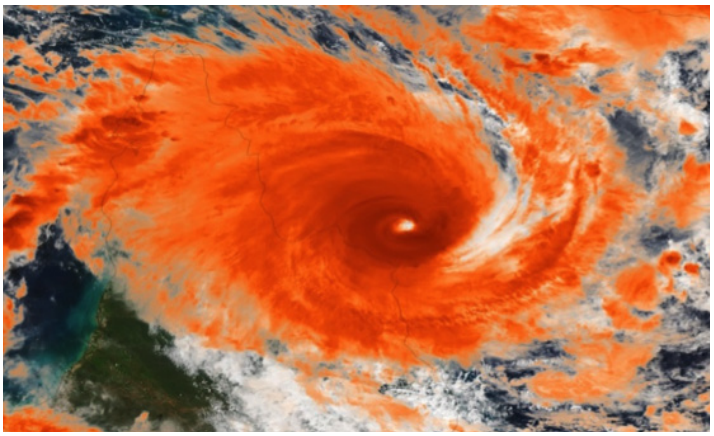

Figure 4. The VIIRS instrument on the NOAA/NASA Suomi NPP satellite captured this image of Tropical Cyclone Ita near Cape Flattery, Queensland, Australia on April 11, 2014. Credit: NOAA

JPSS and the 2014 Atlantic Hurricane Outlook

Thanks to JPSS satellites, the ability to use satellites to locate a storm that could evolve into a hurricane may become more accurate during this years' Atlantic hurricane season, which began on June 1. NOAA scientists are finding ways to incorporate data from Suomi NPP's VIIRS sensor that allows observations of Earth's atmosphere and surface during nighttime hours and offers enhanced capability to see through clouds. On May 22, NOAA issued the Atlantic hurricane outlook for 2014, with NOAA's Climate Prediction Center forecasting a near-normal or below-normal season. The outlook calls for a 50 percent chance of a below-normal season, a 40 percent chance of a near-normal season and only a 10 percent chance of an above-normal season. The main driver of this year's outlook is the anticipated development of El Niño this summer. El Niño causes stronger wind shear, which reduces the number and intensity of tropical storms and hurricanes. For more information on how JPSS satellites will make hurricane forecasts more precise, click here.

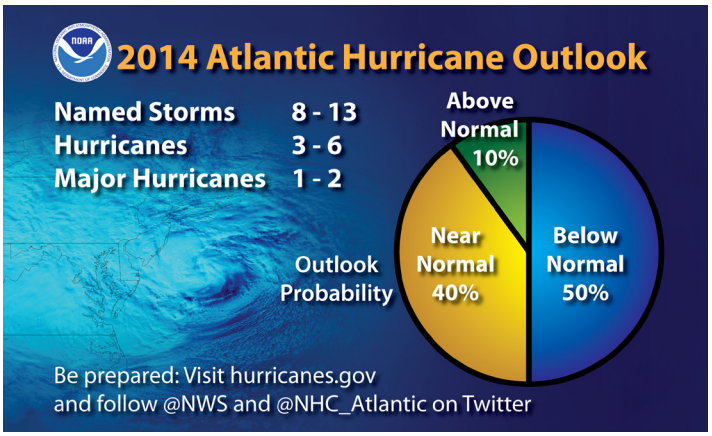

Figure 5. 2014 Atlantic hurricane outlook. Credit: NOAA

JPSS Program on Track: JPSS-1 Mission CDR Successfully Completed

JPSS completed a successful JPSS-1 Mission Critical Design Review (MCDR) April 22-24. The Standing Review Board (SRB) provided high marks for the integrated NOAA/NASA team, including maturity of the design; established requirements and change processes; budget stability, resolving facilities issues, use of an Integrated Master Scheduled (IMS) as a management tool, selection of reliable Delta II launch vehicle; and integrated and comprehensive risk management processes.

VIIRS True Color Available with NOAA View

Just in time for Earth Day 2014, NOAA incorporated beautiful True Color data from the VIIRS instrument into the NOAA View portal. True Color imagery uses different wavelengths of light detected by the instrument to create a close approximation of how Earth appears to the human eye. Although it is not actual photography, the imagery is like looking at a picture of Earth. NOAA scien-

tists use 10 of VIIRS' 21 channels to create photorealistic image of the planet. These and other channels can be combined to make composites that are also used for a wide range of applications, including differentiating snow and ice from clouds, ash and smoke from clouds, and even the boundaries between warm and cold air masses. All of these capabilities play a role in developing weather forecasts that can save lives.

The NOAA View portal is an educational tool that provides a single point for experiencing beautiful imagery and other environmental data captured by satellites and other observational and analysis platforms. NOAA View brings together more than 60 different sets of data, some even as far back as 1880, with new data sets being added regularly. Content is updated on a daily, weekly, monthly or annual basis as data observations and collections permit.

NOAA View is compatible with all major internet browsers, as well as Apple and Android mobile devices. Users can browse, animate and download high-resolution imagery from the NOAA Visualization Lab, making it an ideal tool for putting NOAA data into the hands of students in classrooms and the general public around the world. To see this beautiful True Color imagery visit www.nnvl.noaa.gov/true.php, or visit the NOAA View portal at www.nnvl.noaa.gov/view.

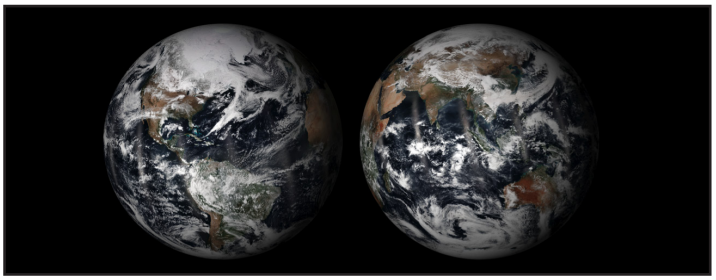

Figure 6. These side-by-side True Color images of our Earth were captured by the VIIRS instrument on the NOAA/NASA Suomi NPP satellite. Credit: NOAA Visualization Lab

2014 Satellite Proving Ground and User Readiness Meeting

The inaugural Satellite Proving Ground and User Readiness Meeting was held from June 2-6 and was co-sponsored by JPSS. This collaborative forum was led by JPSS Chief Program Scientist Mitch Goldberg, Ph.D., who, along with his staff, discussed JPSS developments with partners from across NWS. Attendees included representatives from Weather Forecast Offices (WFOs), NWS Regional Centers, NWS River Forecast Centers, and National Centers for Environmental Prediction (NCEP). NWS participants briefed on best practices for using Suomi NPP data in operations and the actions being taken to evaluate new JPSS capabilities in seasonal operational demonstrations. Copies of the briefings from this meeting are available by contacting the JPSS science team at bill.sjoberg@noaa.gov.

Figure 7. 2014 Satellite Proving Ground and User Readiness Meeting, June 2-6, 2014. National Weather Service Training Center, Kansas City, Mo. Credit: NOAA

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